MUNICIPAL SOLID WASTE LANDFILL
GAS COLLECTION AND CONTROL SYSTEM (GCCS)

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

COTTONWOOD HILLS RECYCLING AND DISPOSAL FACILITY
MARISSA, ILLINOIS

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STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

COTTONWOOD HILLS RDF
MARISSA, ILLINOIS

This startup, shutdown, and malfunction (SSM) plan (SSM Plan) was prepared by Waste Management of Illinois, Inc. in order to comply with the requirements of 40 CFR 63.6(e)(3), as this facility is subject to 40 CFR Part 63, Subpart AAAA, the National Emission Standard for Hazardous Air Pollutants (NESHAPs) for Municipal Solid Waste (MSW) landfills. The SSM Plan contains all of the required elements set forth within 40 CFR 63.6(e)(3).

This SSM Plan will be revised if the procedures described herein do not adequately address any malfunction or startup/shutdown events that occur at the facility. A copy of the original plan and all revisions/addenda will be kept on file at the facility for at least five (5) years. The Facility Manager is responsible for assuring that the most recent copy of this SSM Plan is made available to all personnel involved with the landfill gas (LFG) collection and control system (GCCS) at Cottonwood Hills RDF as well as to appropriate regulatory agency personnel for inspection.

Name of Plan Preparer: Steven M. Niehoff, P.E. (Name) — January 1, 2014 (Date)

Approved:
Facility Manager: _____ (Name) — 1-1-2014 (Date)

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Appendices

1 Revision History

Add the effective date of the most recent revision to the list below. Do not overwrite or delete any dates. This is intended to be a complete record of all revisions made to this plan, and assists in making certain that all plan versions are retained for at least 5 years as required by §63.6(e)(3)(v).

Date of Initial Issuance
February, 2008
Revision Dates
January 1, 2014

2 Introduction

2.1 Purpose and Scope

The owner or operator of an affected municipal solid waste (MSW) landfill must develop a written startup, shutdown, and malfunction (SSM) Plan. The SSM Plan must describe, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; a program of corrective action for malfunctioning processes; and air pollution control and monitoring equipment used to comply with the relevant standard. The SSM Plan does not need to address scenarios that would not cause the source to exceed an applicable emission limitation in the relevant standard. Further, the elements of the SSM plan shall not be considered to be an applicable requirement (of a facility's Title V Operating Permit) as defined in 40 CFR Section 70.2 and 71.2.

The SSM Plan serves the following purposes:

- Ensure that, at all times, the MSW landfill owner or operator operates and maintains the affected source, including associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions;
- Ensure that MSW landfill owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and
- Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore any malfunctioning process and/or air pollution control equipment to its normal or usual manner of operation).

The Cottonwood Hills RDF is an existing affected source under the Maximum Achievable Control Technology (MACT) rule for MSW landfills. Cottonwood Hills RDF initially commenced construction in March 2000, and operation of the GCCS began in February 2008. As such, a SSM Plan was required to be prepared and implemented for this landfill site by February 2008, and this SSM Plan meets or exceeds this requirement.

The management of the Cottonwood Hills RDF fully understands and acknowledges the SSM Plan requirements of the MACT rule. This SSM Plan has been developed to specifically address these requirements as summarized above.

2.2 Description Of SSM Plan

This SSM Plan has been divided into three major sections comprising the major elements related to startup, shutdown, and/or malfunction of a landfill gas (LFG) collection and control system (GCCS) at a MSW landfill. Malfunction events are sudden, infrequent, and not reasonably preventable failures of the GCCS (and related monitoring equipment) to operate in a normal or usual manner and which result, or have the potential to result, in an exceedance of one or more

emission limitations under the New Source Performance Standards for MSW Landfills. Startup and shutdown events are generally planned events associated with system repair, maintenance, testing, and upgrade, and may or may not be related to, or occur in association with, a malfunction of the GCCS.

2.3 Site Equipment Subject To This SSM Plan

The following components of the GCCS are subject to this SSM Plan:

Landfill gas moving equipment
Flame monitoring and recording equipment
Flow monitoring and recording equipment
Landfill gas utility flares

3 Startup Plan

This section details procedures for the startup of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions.

Pursuant to the requirements of The NSPS for MSW landfills, a GCCS must be installed and operated when an applicable landfill exceeds a threshold of 50 Mg/year NMOC and meets all the other criteria requiring gas collection and control at a landfill.

3.1 How to Identify a GCCS Startup Event

The regulatory definition of "startup" reads as follows:

> **"Startup** means the setting in operation of an affected source or portion of an affected source for any purpose." (§63.2)

GCCS startup operations generally include startup of gas mover equipment, LFG control devices, and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.).

3.2 Actions To Take When the GCCS is Started

The following provides a summary of typical response actions for startup of the GCCS.

3.2.1 Gas Mover and Collection System

The following activities may have the potential to emit regulated air pollutants to the atmosphere during startup of the collection system portion of GCCS: (1) purging of gases trapped within piping system prior to normal operation; (2) repair of system leaks discovered during startup, and (3) all other activities after construction of the system but prior to fulltime operation, which could release HAPs from the collection system. These activities could potentially be subject to the Startup Plan portion of the SSM Plan. However, it is unlikely that these events would cause the source to exceed any applicable emission.

During such activities, work shall progress such that air emissions are minimized to the greatest extent possible by:

- Temporarily capping pipes that may vent gas, if such capping does not impact safety or the effective construction of the system.
- Minimizing surface area that could allow gas emissions to the atmosphere, to the extent that it does not impact safety or the effective construction of the system.

- Ensuring that other parts of the system, not impacted by the activity, are operating in accordance with the applicable requirements of NSPS.
- Limiting the purging of piping to as short a duration as possible to ensure safe combustion of the gas in the control device.

A GCCS, once installed, is a "closed" system designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point to the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time and subsequently opened. Opening these valves shall not be considered a startup, unless such an activity causes the source to exceed an applicable emission limitation. If the activity results in such an exceedance, the actions listed in Sections 3.3 through 3.5 shall be followed.

The operation of the collection system, once installed, shall be consistent with the provisions of NSPS as well as the GCCS Design Plan, which has been developed and approved for the facility.

3.2.2 Utility Flares

Personnel shall follow proper procedures when starting a utility flare. Startup procedures can be located in operations manuals, notes, reports, or other sources.

3.2.2.1 Manual Startup

Personnel shall follow the procedures identified in Appendix C when starting the utility flare.

3.2.2.2 Automatic Startup

The utility flare is designed for unattended operation. After a shutdown, the flare will automatically attempt to re-start itself (via an automatic sparker, pilot flame, or similar device).

3.3 What to Record for Any Startup Event That Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, normal startups of utility flares do not cause an emission limitation to be exceeded and do not need to be recorded.

If a malfunction occurs during startup, and the malfunction causes, or has the potential to cause, an emission exceedance, follow the procedures outlined in the "Malfunctions" section.

Facilities may, at their discretion, record all startup events regardless of whether an emission limitation was exceeded, in order to document downtime and/or runtime as needed.

In the event that a startup caused an emission limitation to be exceeded (typically identified as a period during which free-venting of landfill gas occurred), the operator shall record the following information:

- The date and time the startup occurred.
- The duration of the startup. This is the time between the startup was initiated until the time the unit reached normal operating conditions.
- Records (e.g., form, checklist) that demonstrate that the procedures specified in this SSM Plan were followed.
- If the actions were not consistent with this SSM Plan, then the facility must record the actions taken for that event. The facility may use the **Deviation Report Form** (Appendix B) to record such events. Actions not consistent with this SSM Plan must be reported within 2 working days, followed by a letter within 7 working days after the end of the event.
- The gas technician/manager or other appropriate personnel shall prepare the initial records upon discovery of a startup that caused an emission limitation of the relevant emission standards to be exceeded.
- The gas technician/manager or other appropriate personnel shall finalize the records upon successful implementation of the SSM Plan and notification shall be provided to the Facility Manager.
- The relevant records shall be retained electronically (or hard-copy files) for five (5) years.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document SSM events and SSM Plan Departures.

3.4 Whom to Notify in Case of a Startup Event that Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, normal startups of utility flares do not cause an emission limitation to be exceeded and do not require notification.

If a malfunction occurs during startup, and the malfunction causes, or has the potential to cause, an emission exceedance, follow the procedures outlined in the "Malfunctions" section.

- Notify the Facility Manager or other appropriate personnel of the startup that causes an emission limitation of the relevant emission standards to be exceeded.

- Notify the Facility Manager or other appropriate personnel within a reasonable timeframe of progress of the diagnosis and resolution of the startup that causes an emission limitation of the relevant emission standards to be exceeded.

- Notify the Facility Manager or other appropriate personnel when the alternative timeframe for startup has been established if it is outside of the timeframes currently allowed by the NSPS for particular compliance elements.

3.5 What to Report for a Startup Event That Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, normal startups of utility flares do not cause an emission limitation to be exceeded and do not need to be reported.

If a malfunction occurs during startup, and the malfunction causes, or has the potential to cause, an emission exceedance, follow the procedures outlined in the "Malfunctions" section.

If the actions taken during the startup **were consistent** with this SSM Plan, then state such information in your semi-annual SSM report (within 30 days following the end of each 6-month period) with the following information included:

1. Name and title of Facility Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official; and
3. A summary of the actions taken to minimize emissions during applicable startups. This may be prepared once for similar events.

If the actions taken during a startup **were not consistent** with this SSM Plan, **and** the startup caused an exceedance of an emission limitation, the Facility Manager or other appropriate personnel must report the actions taken to the enforcing authority by telephone or facsimile transmission (or an otherwise acceptable manner) within two (2) working days after the startup. A letter must be sent to the enforcing authority within seven (7) working days after the startup. The letter shall be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Name and title of Facility Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);

3. Detailed explanation of the circumstances of the startup causing an emission limitation of the relevant emission standards to be exceeded;
4. The reasons for not following the SSM plan, describing all excess emissions and/or parameter monitoring exceedances which are believed to have occurred, and actions taken to minimize emissions.
5. A copy of the **Deviation Report Form or other records that document the departure.**

Note: If the SSM Plan is revised to re-define activities that constitute a startup, shutdown, or malfunction; or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule, the revised SSM Plan does not take effect until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

4 Shutdown Plan

This section details procedures for the shutdown of the GCCS to ensure that, at all times, good safety and air pollution control practices are used for minimizing emissions.

Pursuant to the requirements of the NSPS for MSW landfills, a GCCS can not be removed unless the landfill meets all the applicable criteria for removal of collection and control system in 40 CFR 60, Subpart WWW.

4.1 How to Identify a GCCS Shutdown Event

The regulatory definition of "shutdown" reads as follows:

> **"Shutdown** means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose." (§63.2)

With GCCS, shutdown events would generally include shutdown of gas mover equipment, LFG control devices, and any ancillary equipment that could affect the operation of the GCCS (e.g., power supply, air compressors, etc.). The activities listed in Table 4-1 could potentially be subject to the Shutdown Plan portion of the SSM Plan. However, it is unlikely that these events would cause the source to exceed any applicable emission limitation in The NSPS.

The following list includes events that may cause a shutdown of the GCCS at a MSW Landfill. This list should not be considered exhaustive.

Table 4-1—Potential Events That May Cause a Shutdown of the GCCS

Control Device Maintenance, Repair, or Cleaning
Addition of New GCCS Components
Raising or Other Modification of Gas Extraction Wells
Movement of LFG Piping to Accommodate New Components or Filling Operations
Source Testing
Gas Mover Equipment Maintenance, Repair, or Cleaning
Gas Processing Equipment Maintenance, Repair, or Cleaning
Ancillary Equipment (e.g., compressors, etc.) Maintenance, Repair, or Cleaning
New Equipment Testing and Debugging
Shutdown to Address Malfunctions or Other Occurrences
Planned Electrical Outages
Unplanned Electrical Outages
Sudden Change in Gas Quality

4.2 Actions To Take When The GCCS Is Shut Down

4.2.1 Collection System

GCCS's, once installed, are "closed" systems designed to prevent the uncontrolled release of LFG to the atmosphere. The network of piping installed at the site connects each extraction point with the control device(s) with no open vents located anywhere in the collection system.

Portions of collection systems or individual extraction points may be isolated by valves installed in the system from time to time. Closing these valves shall not be considered a shutdown, unless such activity causes an exceedance of the provisions of NSPS, the facility's GCCS design plan, or other applicable approval. If a shutdown causes the source to exceed an applicable emission limitation, the recordkeeping, notification, and reporting procedures outlined in Sections 4.3, 4.4, and 4.5, respectively, should be followed.

4.2.2 Utility Flares

Personnel shall follow proper procedures when shutting down a utility flare. Shutdown procedures can be located in operations manuals, notes, reports, or other sources.

4.2.2.1 Manual Shutdown

Under normal circumstances, shutdown of the utility flare causes an automatic shutdown of the gas moving equipment and does not result in exceedance of an emission limitation. Personnel shall follow the procedures identified in Appendix C when shutting down the utility flare.

4.2.2.2 Automatic Shutdown

The utility flare will automatically shut down if power is lost, gas flow/quality drops below a pre-set point, or other conditions occur. Under normal circumstances, shutdown of the flare causes an automatic shutdown of the gas moving equipment and does not result in exceedance of an emission limitation.

4.3 What To Record For Any Shutdown Events That Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, normal shutdowns of utility flares do not cause an emission limitation to be exceeded and do not need to be recorded.

If a malfunction occurs during shutdown, and the malfunction causes, or has the potential to cause, an emission exceedance, follow the procedures outlined in the "Malfunctions" section.

The operator shall record the following information for any shutdown that caused an emission limitation of the relevant emission standards to be exceeded:

- The date and time the shutdown occurred.
- The date and time the landfill gas flow rate to the control device reached zero
- The duration of the shutdown (for SSM recordkeeping, this is the time the shutdown occurred until the landfill gas flow reached zero).
- Records (e.g., form, checklist) that demonstrate that the procedures specified in this SSM Plan were followed.
- If the actions taken were not consistent with this SSM Plan, then the facility must record the actions taken for the event. The Facility may use the **Deviation Report Form** (Appendix B) to record such events. Actions not consistent with this SSM Plan must be reported within 2 working days, followed by a letter within 7 working days after the end of the event.
- The gas technician/manager or other appropriate personnel shall prepare the initial records upon discovery of a shutdown that caused an emission limitation of the relevant emission standards to be exceeded.
- The gas technician/manager or other appropriate personnel shall finalize the records upon successful implementation of the SSM Plan and notification shall be provided to the Facility Manager or other appropriate personnel.
- The relevant records shall be retained electronically (or hard-copy files) for five (5) years.

Note: Periods where control system did not operate more than 1 hour, or collection system did not operate more than 5 days must be recorded and reported under the NSPS even if an emission limit is not exceeded. Facilities may, at their discretion, record all shutdown events regardless of whether an emission limitation was exceeded, in order to document downtime and/or runtime as needed.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document SSM events and SSM Plan Departures.

4.4 Whom to Notify in Case of a Shutdown Event that Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, normal shutdowns of utility flares do not cause an emission limitation to be exceeded and do not require notification.

If a malfunction occurs during shutdown, and the malfunction causes, or has the potential to cause, an emission exceedance, follow the procedures outlined in the "Malfunctions" section.

- Notify the Facility Manager or other appropriate personnel of the shutdown that causes an emission limitation of the relevant emission standards to be exceeded.
- Notify the Facility Manager or other appropriate personnel within a reasonable timeframe of progress of the diagnosis and resolution of the shutdown that causes an emission emission limitation of the relevant emission standards to be exceeded.
- Notify the Facility Manager or other appropriate personnel when the alternative timeframe for shutdown has been established if it is outside of the timeframes currently allowed by the The NSPS for particular compliance elements.

4.5 What to Report for a Shutdown Event That Causes an Emission Exceedance

Based on changes in SSM regulations published on April 20, 2006, normal shutdowns of utility flares do not cause an emission limitation to be exceeded and do not need to be reported.

If a malfunction occurs during shutdown, and the malfunction causes, or has the potential to cause, an emission exceedance, follow the procedures outlined in the "Malfunctions" section.

If the actions taken during the shutdown causing an emission limitation of the relevant emission standards to be exceeded **were consistent** with this SSM Plan, then state such information in your semi-annual SSM report (within 30 days following the end of each 6-month period) with the following information included:

1. Name and title of Facility Manager or Other appropriate Facility Personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.); and
3. A summary of the actions taken to minimize emissions during applicable shutdowns. This may be prepared once for similar events.

If the actions taken during a shutdown **were not consistent** with this SSM Plan, **and** the shutdown caused an exceedance of an emission limitation, the Facility Manager or other appropriate personnel must report the actions taken to the enforcing authority by telephone or facsimile transmission (or an otherwise acceptable manner) within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the shutdown. The letter shall be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Name and title of Facility Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Detailed explanation of the circumstances of the shutdown causing an emission limitation of the relevant emission standards to be exceeded;
4. The reasons for not following the SSM plan, describing all excess emissions and/or parameter monitoring exceedances which are believed to have occurred, and actions taken to minimize emissions.
5. A copy of the **Deviation Report Form or other records that document the departure.**

Note: If the SSM Plan is revised to re-define activities that constitute a startup, shutdown, or malfunction; or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule, the revised SSM Plan does not take effect until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

5 Malfunction Plan

5.1 How to Identify a GCCS Malfunction

The regulatory definition of "malfunction" reads as follows:

> "**Malfunction** means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." (§63.2, revised 5/30/03)

The following list includes events that may constitute a malfunction of the GCCS at Cottonwood Hills RDF. The cause of these events will be investigated in order to determine the best course of action to correct the malfunction. Each of these malfunctions could have multiple causes that need to be evaluated and possibly considered. It is the intent of this SSM Plan to include all possible causes for the specific malfunction events. Common malfunction events for LFG collection and control systems are listed in Table 5-1.

Table 5-1—Potential Malfunction Events

Possible Malfunction	Section
Loss of LFG Flow/Gas Mover Malfunction	5.3
Loss of Flame at the Control Device	5.4
Malfunction of Flow Measuring/Recording Device	5.5
Malfunction of Flame Presence/Recording Device	5.6
Other Control Device Malfunctions	5.7

The following list constitutes the possible exceedances of emission limitations that could occur due to a malfunction of GCCS, thereby necessitating implementation of this SSM Plan:

Table 5-2— Potential Emission Limitation Exceedances Caused by Malfunction Events

GCCS downtime of greater than 5 days (if alternative timeframe has not been established).
Free venting of collected LFG for any period due to downtime of flame presence/recording equipment (if alternative timeframe has not been established).
Excess flow through control device(s) for any period due to downtime of flow monitoring/recording equipment (if alternative timeframe has not been established).
Visible emissions from utility flare for more than 5 minutes during any two consecutive hours.

Malfunctions that result in or have the potential to result in an exceedance of an emission limitation shall be considered actionable under this SSM Plan whether they are discovered by Cottonwood Hills RDF personnel during normal operations, or by a regulatory agency during compliance inspections.

The operator shall follow the corrective action, notification, recordkeeping, and reporting procedures described herein in case of malfunction of the GCCS.

5.2 Actions to Take When the GCCS Malfunctions—All Malfunctions

- Determine whether the malfunction has caused an exceedance, or has the potential to cause an exceedance, of any applicable emission limitation.

- Identify whether the malfunction is causing or has caused excess emissions to the atmosphere. If excess emissions are occurring, take necessary steps to reduce emissions to the greatest extent possible using good air pollution control practices and safety procedures.

- Some common malfunctions, along with their associated remedies, are summarized in Appendix A. Personnel shall follow these procedures when addressing a malfunction of a collection system or control device.

- Contact the Facility Manager or other appropriate personnel and proceed with the malfunction diagnosis and correction procedures for each specific malfunction.

- Notify the Facility Manager or other appropriate personnel of the progress of the diagnosis and correction procedures and status of the malfunction as soon as practicable.

- If the GCCS malfunction cannot be corrected within the time frame specified in the The NSPS, then:

    - Notify the Facility Manager or other appropriate personnel and proceed to shutdown the control device and/or the process(es) venting to the control device, if this has not already occurred automatically.

- Define the appropriate alternative timeframe for corrective action that is reasonable for the type of repair or maintenance that is required to correct the malfunction.

- Complete the appropriate record keeping and reporting required for deviations of the MACT rule and Title V permit.

- Once the malfunction is corrected, notify the Facility Manager or other appropriate personnel as soon as the system is operational.

- Complete records after the malfunction diagnosis and correction procedures are completed.

- Follow procedures in Sections 5.8 through 5.10, as appropriate, to adequately document, notify, and report the malfunction and corrective action. If the SSM Plan must be revised based on this information, follow the procedures listed below.

If the procedures in this SSM Plan do not address or adequately address the malfunction that has occurred, the operator shall record the circumstances and the actual steps taken to correct the malfunction. The Facility Manager or other appropriate personnel shall be notified of this situation. The facility must record deficiencies with procedures for addressing the malfunction and may use the **Deviation Report Form** (Appendix B) to record such event(s), or equivalent recordkeeping format.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document the deficiencies with procedures for addressing the malfunction and SSM Plan departures.

The SSM Plan must be updated, within 45 days after the event, to better address this type of malfunction. In general, revised SSM Plans shall not take effect until after the facility has provided a written notice (describing the revision) to the permitting authority. Revisions made to the SSM Plan are not to be considered revisions to the facility's Title V Operating Permit and the elements of the plan are not applicable requirements of the Title V Operating Permit.

5.3 Loss of LFG Flow/Gas Mover Malfunction

- Follow the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shut down. If control device has shut down, make sure that gas mover equipment has shut down to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the timeframe allowed by the NSPS, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.4 Loss of Flame at the Control Device

- Follow also the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shut down. If control device has shut down, make sure that gas mover equipment has shut down to prevent free venting of LFG. Attempt to restart control device to determine if system will remain operational.

- If system will not restart, follow also the procedures in Section 5.3, above: **Loss of LFG Flow.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the time frame allowed by the NSPS, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.5 Malfunctions of Flow Monitoring/Recording Device

- Follow the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected in the time frame allowed by the NSPS, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.6 Malfunctions of Flame Presence/Recording Device

- Follow the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction cannot be corrected within the timeline established by the NSPS, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.7 Other Control Device Malfunctions

- Follow also the procedures in Section 5.2, above: **What to Do When the GCCS Malfunctions—All Malfunctions.**

- Check to see if the control device has shut down. If the control device has shut down, make sure that gas mover equipment has shut down to prevent free venting of LFG. Attempt to restart the control device to determine if system will remain operational.

- Conduct diagnostic procedures to identify the cause of the malfunction. Potential causes and response actions for this type of malfunction are listed in Appendix A.

- If the malfunction causes the entire GCCS to go off-line and cannot be corrected within 5 days, follow the procedures under Section 5.2 above to establish an appropriate alternative timeframe for corrective action and complete necessary record keeping and reporting if the malfunction cannot be corrected within the established timeframe.

5.8 What to Record for a Malfunction Event

The gas technician/manager or operator must record the following information for each malfunction that occurs:

- The date and time the malfunction occurred.

- The duration of the malfunction.

- A description of the affected equipment.

- The cause or reason for the malfunction (if known).

- The actions taken to correct the malfunction and minimize emissions (e.g., form/checklist).

- Whether the procedures in this SSM Plan were followed. If the procedures in the plan were not followed, the facility must complete records. The **Deviation Report Form** (Appendix B), or equivalent recordkeeping format may be used to record such events.

- If applicable, a description of the emission standard that was exceeded or had the potential to be exceeded.

- The gas technician/manager or other appropriate personnel shall prepare the initial records upon discovery of the malfunction and implementation of the SSM Plan.

- The records shall be finalized by the gas technician/manager or other appropriate personnel upon successful implementation of the SSM Plan and the Facility Manager and/or other appropriate personnel shall be notified of the system update.

- The data must be retained in the landfill files for five (5) years.

Note: The facility may use the GCCS Recordkeeping System template prepared by Corporate Air Programs to record/document SSM events and SSM Plan Departures.

5.9 Whom to Notify at the Facility for a Malfunction Event

- Notify the Facility Manager or other appropriate personnel of the malfunction.

- Notify the Facility Manager or other appropriate personnel within a reasonable timeframe of progress of the diagnosis and corrective action of the malfunction.

- Notify the Facility Manager or other appropriate personnel when the alternative timeframe for corrective action has been established if it is outside of the timeframes currently allowed by the NSPS/EG for particular compliance elements.

- Notify the Facility Manager or other appropriate personnel if the malfunction cannot be corrected within the timeframe allowed by the NSPS rule or the alternate timeframe established under this SSM Plan. Notification shall also occur if the malfunction that occurred is not addressed b by the current SSM Plan.

5.10 What to Report for a Malfunction Event

Reporting of a malfunction event is required if the malfunction caused, or had the potential to cause, an exceedance of an applicable emission limitation.

If the actions taken during the malfunction **were consistent** with this SSM Plan, file the necessary information in your semi-annual SSM report (*within 30 days following the end of each 6-month period*) with the following information included:

1. Name and title of Facility Manager or other appropriate personnel;

2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Statement that the actions taken during the malfunction were consistent with the SSM Plan; and
4. Number, duration, and brief description of each malfunction.

If the actions taken during a malfunction **were not consistent** with this SSM Plan, the Facility Manager or other appropriate personnel must report the actions taken to the enforcing authority by telephone or facsimile (FAX) transmission within two (2) working days after commencing the actions that were inconsistent with the plan. A letter must then be sent to the enforcing authority within seven (7) working days after the malfunction. The letter shall be sent by certified or registered mail or overnight delivery service, and must include the following information:

1. Name and title of Facility Manager or other appropriate personnel;
2. Certifying signature of the owner/operator or other responsible official (Note that "responsible official" has the same meaning as under the Title V permitting program. See previous corporate guidance on this topic.);
3. Number, duration, and brief description of each malfunction.;
4. Detailed explanation of the circumstances of the malfunction;
5. The reasons the SSM Plan was not adequate; and
6. The excess emissions and/or parameter monitoring exceedance that is believed to have occurred during the event.
7. Actions taken to minimize emissions.

In addition, if the actions taken during the malfunction **were not consistent** with this SSM Plan, the Facility Manager or other appropriate personnel at the landfill must:

1. Revise the SSM Plan within 45 days after the malfunction to include procedures for operating and maintaining the GCCS during similar malfunction events.
2. Report that the facility revised the SSM Plan within the next semi-annual submittal (within 30 days following the end of each 6-month period).

Note: If the SSM Plan is revised to re-define activities that constitute a startup, shutdown, or malfunction; or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in the MACT rule, the revised SSM Plan does not take effect until written notice has been provided to the permitting authority describing the SSM Plan revision(s).

APPENDIX A

Common Causes and Response Actions for GCCS Malfunctions

(Note that this list is not considered to be exhaustive. The list of response actions is not intended to be a sequence of events that are to be implemented in order. Certain malfunction incidents may or may not be associated with the listed "common causes" nor will the "common response actions" be appropriate in all instances. Incident-specific evaluation of the malfunctions and development of specific response actions is recommended in all cases.)

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	-Repair breakages in extraction piping -Clean flame arrestor -Repair blockages in extraction piping -Verify automatic valve operation, compressed air/nitrogen supply -Provide/utilize auxiliary power source, if necessary -Repair Settlement in Collection Piping - Repair Blower -Activate back-up blower, if available -Clean knock-up pot/demister -Drain knock-out pot
Utility Flare	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	-Check/repair temperature monitoring equipment -Check/repair thermocouple -Follow procedures for loss of flow/blower malfunction -Check/adjust air/fuel controls -Check/adjust/repair flame sensor -Check/adjust LFG collectors
Utility Flare	Combusts LFG	Other Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with pilot light system -Problems with air/fuel controllers -Problems with thermocouple -Problems with burner -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	-Site-specific diagnosis procedures -Site-specific responses actions based on diagnosis -Clean pitot/orifice -Clean/drain flame arrestor -Refill propane supply -Check/repair pilot sparking system
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair flow measuring device and/or wiring -Check/repair chart recorder -Replace paper in chart recorder

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Flame Presence/ Recording Device	Monitors and records presence of flame at utility flare.	Malfunctions of Flame Sensing/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	-Check/adjust/repair thermocouple -Check/adjust/repair controller and/or wiring -Check/adjust/repair electrical panel components -Check/repair chart recorder -Replace paper in chart recorder

APPENDIX B

SSM Reporting Forms

STARTUP/SHUTDOWN/MALFUNCTION REPORT FORM

Section 1 - GCCS Components and Comments **SITE NAME:** Cottonwood Hills RDF

☐	Control Device or Fuel Skid - *describe:*
☐	Gas Mover Equipment - *describe:*
☐	Monitoring/Recording Equipment - *describe:*
	Comments:

Section 2 - All Events

Type of Event	Date/Time Start	Date/Time End	Duration (hours)	Event Description (use pull-down menu)	SOP* Followed? Yes	No**
☐ Shutdown						
☐ Startup						
☐ Malfunction					**Complete Section 3 Below**	

* Standard Operating Procedure (SOP) for Flare/Fuel Skid Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan

If SOP in SSM Plan was not followed, **notify site engineer immediately.

Section 3 - Malfunction Events Only

Step	Corrective Action Procedures for All Malfunctions	*Check one of the following for each step:* Procedure completed	Procedure Not Applicable
1.	Determine if the malfunction is causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment. *If conditions are unsafe, **notify your supervisor** and follow steps under No. 3*		
2.	Determine if landfill gas being released to the atmosphere (can you smell landfill gas, or measure or detect uncombusted gas flow?). *If landfill gas is being released, follow steps under No. 3*		
3.	If unsafe operating condition exists, or landfill gas is being released to the atmosphere, stop (if possible) landfill gas flow by one or more of the following: a. Close nearest valve to source of emissions b. Place a temporary cap on piping c. Apply other device (i.e. duct tape) d. Shut down blower e. Turn off main power disconnect switch to blower f. Other (Describe): _____ Note: If flare is shut down, follow shutdown SOP and record shutdown time in Section 1 (above)		
4.	Detemine if other personnel or resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis. *If other personnel or resources are not needed, go to No. 6*		
5.	Contact qualified personnel or resource: a. Record contact name, date and time:_____ b. Contact site representative with information recorded in #5.a.		
6.	Start malfunction diagnosis.		
7.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other). *If other resources are not needed, go to No. 9*		
8.	Contact other qualified resource: a. Record contact name, date and time:_____ b. Contact site representative with information recorded in #8.a.		
9.	Fix the malfunction.		
10.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates on this form.		
11.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in boxes in Section 1 of this form.		
12.	Sign this form, copy it, and place it in the Start-up, Shutdown, Malfunction Report Form file.		
13.	If the procedures listed above were not followed, contact the site engineer immediately.		

Signature: _____

APPENDIX C

Standard Operating Procedures for Startup and Shutdown Events

Startup

1 Check that there are no unsafe conditions present.

2 Check that the system is ready to start by one or more of the following:

a. Valves are in correct operating position
b. Levels, pressures, temperatures are within normal starting range
c. Alarms are cleared
d. Power is on and available to control panel and energized equipment
e. Emergency Stop is de-energized
f. Check that there are no gas emissions

3 Initiate start sequence

4 Observe that system achieves normal operating ranges for levels, pressures, and temperatures

Shutdown

1 Check that there are no unsafe conditions present

2 Initiate shutdown sequence by one or more of the following

a. Press Emergency Stop if necessary
b. Close On/ Off switch(es) or Push On/ Off button(s)
c. Close adjacent valves if necessary

3 Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures